

## A REVIEW OF THE HISPINE TRIBE APROIDINI (COLEOPTERA: CHRYSOMELIDAE)

G. A. SAMUELSON

Samuelson, G.A. 1989 11 13: A review of the hispine tribe Aproidini (Coleoptera: Chrysomelidae). *Mem. Qd Mus.* 27(2): 599-604. Brisbane. ISSN 0079-8835.

Three species of *Aproida* Pascoe comprise the Aproidini, a tribe restricted to Australia. The third species is described herein as new. All three are keyed and illustrated.

□ *Aproida*, *Aproidini*, *Australia*, *Chrysomelidae*, *biosystematics*, *distribution*, *key to species*.

G. A. Samuelson, Bishop Museum, PO Box 19000-A, Honolulu, Hawai'i, U.S.A.; 20 October, 1988.

The Aproidini is a small tribe of Hispinae comprising only one genus, *Aproida* Pascoe, 1863, which is restricted to northeastern Australia. A third species is now added to *Aproida*. Material for this study was obtained from the following sources: AMSA = Australian Museum, Sydney; ANIC = Australian National Insect Collection, CSIRO, Canberra; BPBM = Bishop Museum, Honolulu; NSWA = Biological and Chemical Research Institute, Rydalmere; QMBA = Queensland Museum, Brisbane; SAMA = South Australian Museum, Adelaide; JS = Josef Sedlacek, Brookfield.

Measurements of body length and breadth are rounded to the nearest 0.5 mm; other measurements are taken to the nearest 0.01 mm.

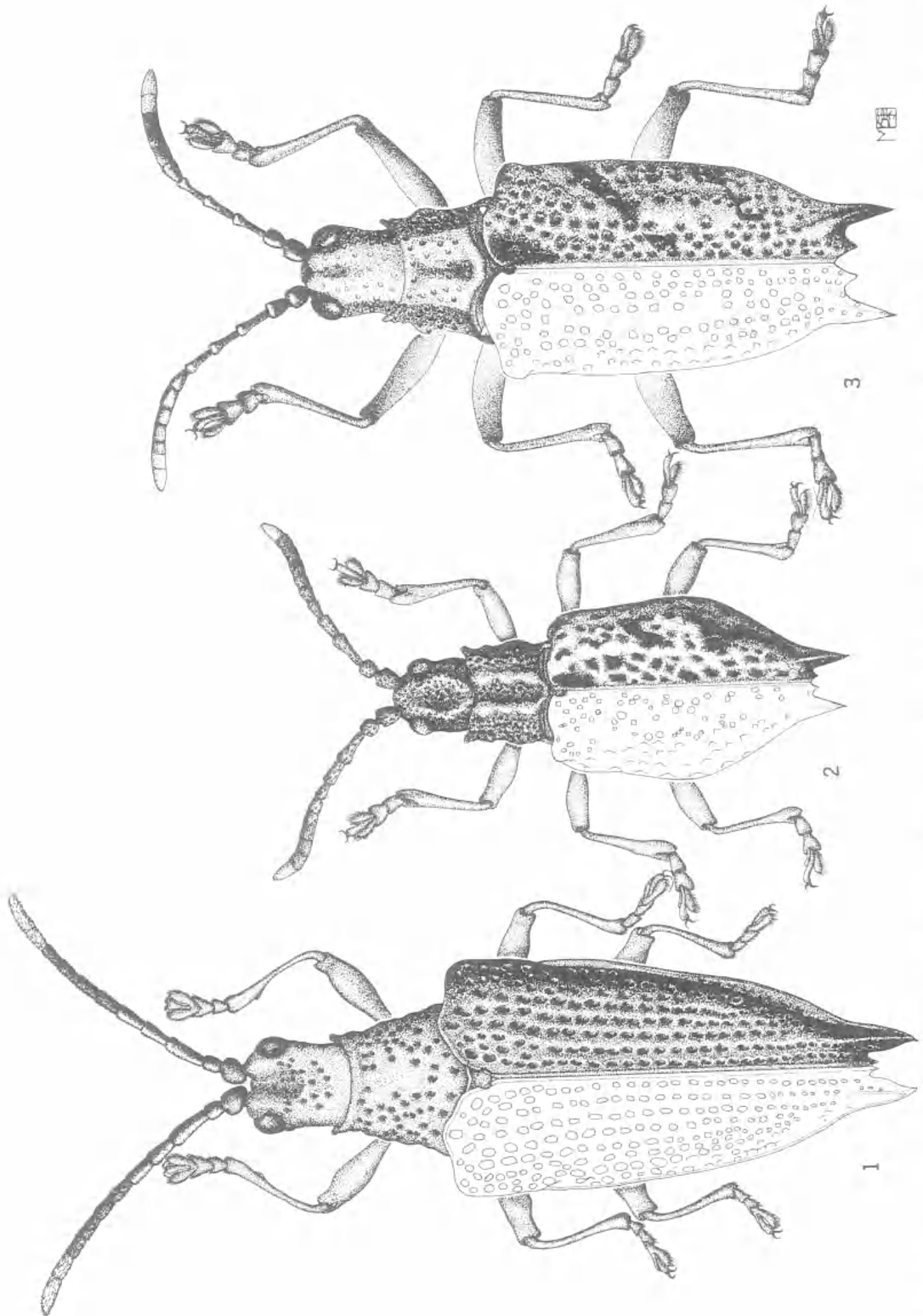
### Aproidini Weise, 1911

Body form somewhat navicular, narrowed anteriorly and posteriorly. Head elongate; front vertical, concave or flattened between antennal insertions; antennal base placed a short distance above mouth, lower part of antennal base with short vertical keel; genal margin of mouth produced as a keel; eye finely faceted. Prothorax without lateral margins and lacking lateral spines; anterior angle with associated pore and seta; posterior angle lacking pore and seta. Elytron with short postscutellar puncture row present, though not always conspicuous; discal puncture rows basically regular but tending to become irregular to confused; elytral apex acute, spined.

The usual body plan in Hispinae tends to be depressed, though the form can range from elongate to stout. Even the linear, more or less cylindrical Eurispini have the abdomen distinctly depressed. The two flighted species of *Aproida* depart from this plan in a slightly compressed, deep body, even though the dorsal surface is flattened along the elytra. This unusual form is best seen in lateral view and it perhaps bears a

resemblance to certain Orthoptera. The brachypterous species, *A. cribrata* Lea, is shallower in the body and has the elytra more convex dorsally.

Weise (1911) based the tribe on the then unique *Aproida balyi* Pascoe. On the basis of tribal keys by Weise (1911) and Würmli (1975), the Aproidini and Anisoderini appear to be the most closely related, but further studies are needed to tell whether they actually are. They are separable on eye facetting, with the former having fine facets with a nearly smooth eye surface and the latter having coarse, swollen facets forming a bumpy surface. The Anisoderini is Oriental and contains three genera with about 75 species, but it does not reach Australia. Weise (1911) provided no special discussion on the affinities of *Aproida*, other than indicating a similarity in the form of the head and thorax to *Exothispa* from Africa. The latter represents the Exothispini, and it appears distant from the Aproidini, as it falls with the tribes lacking the short postscutellar elytral puncture row. *Aproida* has this short puncture row, though it is sometimes practically obliterated by irregular adjacent punctures and swollen interspaces. Würmli (1975) mentioned that the affinities of *Aproida* were unclear, and added that its looks were most similar to the Australian *Eurispa*. The Eurispini is mainly Australian-based, with the bulk of the species in *Eurispa* from Australia and New Guinea. Each of the remaining two eurispine genera contains one species, with *Leucispa* in Australia and *Squamispa* in India. The conformation of the head in *Aproida* and *Eurispa* indicates some distance between the two tribes. In the former the front of the head is vertical and the antennal bases are prominent and close to the mouth, but in the latter the front is deflected and the antennal bases are distant from the mouth. Each group has its characteristic facies, even though both (excluding the Indian *Squamispa*) have each elytron with an acute apex - the aproidines are much stouter with some compression to the body and the eurispines are



FIGS 1-3. *Aproidea*, dorsal view: 1, *A. batyi*, ♀ (body length 11.55 mm); 2, *A. cribrata*, holotype (body length 5.95 mm); 3, *A. monteithi*, sp. nov., holotype ♂ (body length 8.95 mm).

quite narrow and parallel-sided, and more cylindrical in the body. Würmli's (1975) remark that *Aproida* is one of the most remarkable of all Hispinae is easy to accept, especially when considering the life-history of one of its members. The obvious great phylogenetic distance between *Aproida* and its closest (yet unknown) relative and its geographical restriction suggest a long period of isolation and Gondwanan origins.

## KEY TO SPECIES OF APROIDA

1. Elytron flattened for most of length, lacking discal prominences; pronotal disc concave, lacking longitudinal carinae; antenna with 2 apical segments pale ..... 2  
 Elytron not flattened, disc with irregular elevations; pronotal disc with a pair of submedian longitudinal carinae plus weak sinuate longitudinal elevations sublaterally; antenna with only apical segment pale; body length 5.95 mm ..... *cribrata* Lea
2. Antenna with segments 3-5 elongate, with apices not swollen; dorsum largely pale with dark stripe along side; elytral disc lacking dark oblique markings; body length 9.4-12.45 mm ..... *balyi* Pascoe  
 Antenna with segments 3-5 elongate, with apices distinctly swollen; dorsum largely pale but pronotum with dark lateral stripe and elytral disc with dark oblique line on basal half and a fainter one behind middle; body length 8.95-9.15 mm ..... *monteithi* sp. nov.

*Aproida balyi* Pascoe, 1863  
 (Fig. 1)

## MATERIAL EXAMINED

QUEENSLAND: Brisbane, 7.11.16, H. Hacker, QMBA coll. (1♂); same loc., A.P. Dodd, QMBA coll. (1♀); same loc., 8-16.10.61, C.F. Ashby, ANIC coll. (1♀); same loc., 7.Dec.1972, P. Turner, ANIC coll. (1♀); Brookfield, 25.ix.72, J. Sedlacek, JS coll. (1♀); same data, but 25.x.72 (1♀); same data, but 25.x.73 (1♂); Brookfield, Gold Crk, 4.ix.1983, ex *Eustrephus* leaves, J. Conran, QMBA coll. (1♂ in cop.); Bunya Mt N.P., 5.May.1978, B.J. Selman, ANIC coll. (1♂); Cairns, SAMA coll. (1♂, 1♀); same loc., A.M. Lea, SAMA coll. (1♀); same loc., 3/50, G. Brookes], ANIC coll. (1 minor♂); same loc., 7.1.1952, J. Sedlacek, BPBM coll. (1♀); Cedar Crk, 28.9.30, H. Hacker, QMBA coll. (1♀); Cunningham's Gap, 20.xi.60, J.L. Gressitt, BPBM coll. (1 minor♂); Eungella, 700 m, 28.i.82, J. Sedlacek, BPBM coll. (2♂♂, 1 minor♂, 4♀♀); Kuranda, G.E. Bryant, F.P. Dodd 194, ANIC coll. (1♂, comp. with type by E.B. Britton);

[Lamington] National Park, Dec.1919, H. Hacker, QMBA coll. (1♂); same loc., 20.iii.62, G.B. Monteith, BPBM coll. (1♀); Maleny, 12.1.27, H. Hacker, QMBA coll. (1♂); Moreton Bay, AMSA coll. (1♂, 1♀ without printed label); Mt Macalister, Cardwell Range, 900 m, 18 18S 145 56E, 18-20.Dec.1986, Monteith, Thompson & Hamlet, QMBA coll. (1♂); Mt Mee, 10.9.28, H. Hacker, QMBA coll. (2♂♂, 1♀); Mt Tambourine, A.M. Lea, SAMA coll. (1♂); same loc., A.M. Lea, AMSA coll. (1♀, det. A.M. Lea); Nanango Dist., 26.3.28, H. Hacker, QMBA coll. (1♀); Pine Mountain, ANIC coll. (2♀♀, one without loc. label, permanent loan from Macleay Mus.); nr Rockhampton, J. Sedlacek, BPBM coll. (2♀♀); Springbrook Plateau, 24.xi.1982, on *Eustrephus* leaves, J. Conran, QMBA coll. (2 minor♂♂); same data, but feeding and laying on *Eustrephus* leaves (1♀); S Johnstone R., H.W. Brown, SAMA coll. (1♂, 1♀); Stanthorpe, 1955, J. Sedlacek, BPBM coll. (1♂); Toowoomba, Koebele Coll., BPBM coll. (1♂, 1♀ without locality label); same loc., Nov.1980, J. Macqueen, ANIC coll. (2♂♂, 1 minor♂, 2♀♀); Ugly Gully, S.E.Q., 1.v.1969, E.C. Dahms, QMBA coll. (1♂); Woomby nr Nambour, 16.x.65, D.H. Colless, ANIC coll. (1♀); Wyreema, O.W. Tiegs, AMSA coll. (1♀, det. A.M. Lea); Queensland, without locality, SAMA coll. (1♂); NEW SOUTH WALES: trib. of Busby's Creek, SE of Tabulum, 29 02S 152 43E, 29.8.82, O. Griffiths, AMSA coll. (1♀); Bundjalung N. P. nr Iluka, 12 March 1981, M.J. Fletcher & G.R. Brown, NSW coll. (1♂, det. T.G. Vazirani); same data, but at Iluka Turnoff (1♂); Dingo Tops Forest Park, NW of Wingham, 8.Jan.1984, rain-forest margin, G. Williams, ANIC coll. (1♂); Dorrigo, W. Heron, SAMA coll. (1♀); same loc., ANIC coll. (1♂, det. H.J. Carter); Gibraltar Range N.P., NSW, 15-17.Nov.1979, N.W. Rodd, AMSA coll. (1♀); Glen Innes, Prison Farm, July 1969-Dec.1970, ANIC coll. (1♂, 2♀♀); Hastings R., NSW, 1934, H.J. Davidson, AMSA coll. (1♂); Lansdowne S.F., 31 45S 152 32E, 19.Feb.1983, T. Weir & A. Calder, ANIC coll. (1♂); Maclean locality, lower Clarence R., 9.Nov.1940, A.A. Cameron, AMSA coll. (1♂); Mt Glennie, 16 km E of Woodenbong, 400 m, 24.Nov.1982, G.B. Monteith & D. Yeates, QMBA coll. (3♂♂, 1 minor♂, 1♀); same data, BPBM coll. (2♂♂); Ourimbah, xii.05, Helms Coll., BPBM coll. (1♀, det. J.L. Gressitt); Rivertree, 10.10.31, E. Sutton, QMBA coll. (1♂, 1♀, and 1♂ without date); Ulong, East Dorrigo, W. Heron, AMSA coll. (1♂, 1♀).

## REDESCRIPTION

Dorsum largely pale, yellow- or orange-testaceous, with dark fuscous narrow stripe extending posteriorly from behind eye, thence along side of prothorax and continuing along elytron from humerus to extreme apex; antenna with segments 1-9 black, 10-11 pale testaceous; ventral surfaces and legs yellow- to orange-testaceous.

*Head* rather deeply emarginate anteriorly between enlarged antennal bases; front smooth and concave between antennal bases; vertex broadly and shallowly concave anteriorly and

bearing large shallow punctures; occiput with a series of fine transverse sulci behind posterior margin of eye. *Antenna* extending to about basal fifth of elytron; segments 1-4 smooth and bearing sparse punctures; 5-11 dull, densely micropunctate and clothed with fine pubescence. *Prothorax* strongly narrowed anteriorly; anterior angle toothed at side of anterior margin; lateral margin absent; posterior angle just acute; base convex medially, concave laterally and partly concealed by elytral bases; disc broadly concave and bearing large shallow punctures. *Scutellum* small, apex subtruncate-rounded. *Elytron* broadest at humerus and narrowed posteriorly to acute slightly upturned apical spine; apex also with small tooth at sutural extremity; discal punctures large, confused to irregular, with interspaces tending to be swollen longitudinally. *Ventral surfaces* smooth; metasternum not conspicuously punctate along anterior and lateral margins; abdominal segments 1-2 connate. *Legs*: proleg strongly modified in ♂ and hardly so in ♀; ♂ profemur strongly swollen with preapical concavity; ♂ protibia strongly arched basally and bearing 1 or 2 large isolated teeth preapically; probasitarsus more turgid in ♂ than in ♀; ♀ profemur not strongly swollen, slightly constricted preapically; ♀ protibia not arched basally and lacking prominent preapical teeth.

*Measurements*: ♂ (Kuranda; comp. with type [ANIC]). Body length 10.5 mm; breadth 3.3 mm; head breadth 1.47 mm; eye 0.78 x 0.56 mm; gena 0.19 mm; interantennal space (above) 0.38 mm; antennal socket breadth 0.26 mm; antennal segment lengths (1/100s mm): 44 : 36 : 72 : 56 : 52 : 48 : 48 : 40 : 40 : 38 : 58; head + pronotal length 3.3 mm; pronotal length (mid) 1.68 mm; pronotal breadth (apex) 1.50 mm; pronotal breadth (base) 2.42 mm; elytral length 7.47 mm.

Female (Mt Glennie [QMBA]). Body length 11.55 mm; breadth 3.9 mm; head breadth 1.56 mm; eye 0.80 x 0.60 mm; interocular space (above) 0.98 mm; gena 0.19 mm; interantennal space 0.38 mm; antennal socket breadth 0.28 mm; antennal segment lengths (1/100s mm): 44 : 34 : 70 : 52 : 48 : 42 : 40 : 40 : 40 : 40 : 62; head + pronotal length 3.65 mm; pronotal length (mid) 1.88 mm; pronotal breadth (apex) 1.74 mm; pronotal breadth (base) 2.68 mm; elytral length 8.22 mm.

Sex ratio and variation ( $n = 83$ ): ♂♂ : ♀♀ = 45 : 38. Of the 45 ♂♂, 7 'minor ♂♂' had the profemur and protibia less strongly developed, the latter bearing 1 instead of 2 teeth, with the upper tooth being absent or nearly so. Würmli (1975) included diagrams of the body and profemur + tibia of a

'normal' ♂. Dorsal coloration is basically pale green in life (Monteith, 1970) fading to pale yellow- to darker orange-testaceous in dried specimens; the dark line along side faint or suffused along head and pronotum but sometimes quite distinct along pronotum, and usually complete and distinct on elytron, though sometimes faint or absent along middle of elytron or along entire basal half; apical elytral spine dark in all specimens examined. Antennal segments 1-9 usually dark fuscous to black, occasionally paler reddish or pitchy fuscous, rarely with 9 becoming pale; 10-11 pale yellow-testaceous in all examples seen.

#### REMARKS

This is by far the most common of the three species, and can be found on its host plant, *Eustrephus latifolius* Benth. & Hook., in and east of the Dividing Range in northern New South Wales and Queensland. Monteith (1970) described the life history of this insect, whose habits are very peculiar among the Hispinæ. He noted that all the life stages are passed completely exposed on the host plant, including the pupa. The pupa, which is suspended from the withered skin of the final larval instar, closely resembles the pendant flower buds of the host plant (figured in Monteith, 1970).

#### *Aproidea cribrata* Lea, 1929

(Fig. 2)

#### MATERIAL EXAMINED

QUEENSLAND: [Lamington] National Park, xii.1921, H. Hacker, QMBA coll. (Holotype).

#### REDESCRIPTION

**HOLOTYPE**: Body surfaces pitchy orange to red-testaceous, with dark fuscous markings having a metallic violaceous lustre; antenna with segments 1-7 reddish, 8-10 piceous, and 11 pale yellow-testaceous; ventral surfaces orange-testaceous to pitchy fuscous, generally darker on parts of thorax and paler on abdomen; legs orange-testaceous.

*Head* briefly truncate anteriorly between antennal bases and with outline of median frontal carina visible from above; antennal bases not swollen; front flattened, median carina prominent; vertex broadly depressed centrally and strongly punctate, sulcate anteriorly; surface of side behind eye rugose-punctate and lower side of head behind eye and gena punctate. *Antenna* extending to about basal fifth of elytron; segments 1-6 smooth, even though densely punctate; 7-11 dull, more closely pubescent and not so distinctly punctate.

*Prothorax* only slightly narrowed anteriorly; anterior angle toothed at side of anterior margin; lateral margin absent; disc with a pair of submedian longitudinal carinae (1 + 1) plus weak sinuate longitudinal elevations sublaterally; surface otherwise strongly punctate. *Scutellum* small, apex rounded. *Elytron* moderately convex along side, narrowing preapically to apical spine; disc costate-punctate; punctures large, deep and more or less placed in regular rows; 4 coarse costae apparent, these thickened and narrowed at intervals. *Ventral surfaces*: prosternum coarsely punctate; mesosternum with larger close punctures (3 or 4 occupying visible area); metasternum short, surface alutaceous, sparsely micropunctate but with heavy impressed punctate margins anteriorly and laterally; abdominal sternites 1-2 connate. *Legs*: femora moderately heavy, slightly constricted preapically; tibiae slender.

*Measurements*: body length 5.95 mm; breadth 2.45 mm; head breadth 1.05 mm; eye 0.52 x 0.38 mm; interocular space (above) 0.58 mm; gena 0.23 mm; interantennal space 0.18 mm; antennal socket breadth 0.18 mm; antennal segment lengths (1/100s mm): 31 : 20 : 46 : 30 : 25 : 18 : 20 : 18 : 16 : 29; head + pronotal length 2.00 mm; pronotal length (mid) 1.08 mm; pronotal breadth (apex) 1.26 mm; pronotal breadth (base) 1.44 mm; elytral length 4.00 mm.

#### REMARKS

The holotype appears to be the only known representative of this species, despite its being from a heavily collected locality (G. B. Monteith, pers. comm.). This specimen is brachypterous and the species is probably not capable of flight. The metasternum is extremely short at about 8% of entire body length (metasternum measures 0.5 mm in length) and the surface is weakly turgid, while the two congeners have the metasternum of normal large size at about 15% as long as entire body length and with its surface turgid. Also, the whole length of the wing extends without folds to about the end of the abdomen, indicating some reduction.

#### *Aproida monteithi* sp. nov.

(Fig. 3)

#### MATERIAL EXAMINED

QUEENSLAND: THORNTON Peak summit, via Daintree, 20.ix.1981, 1372 m (4500') elevation, G.B. Monteith (Holotype ♂, allotype ♀).

Type deposition: Holotype and allotype in QMBA.

#### DESCRIPTION

**HOLOTYPE**: Male. Body surfaces yellow-testaceous, with dark fuscous metallic markings as follows: a postoccipital stripe along side of head, a narrow median and a broader lateral stripe on pronotum, a short postscutellar mark on elytral base, a line extending from a short distance behind humerus obliquely and nearly to suture at middle of elytron, another oblique line preapically, and almost entire apical spine; antenna with segments 1-9 dark fuscous, some having paler bases, 10-11 pale testaceous; ventral surfaces largely yellow-testaceous; prosternum with postcoxal dark area extending to posterior angle; mesepisternum and mesepimeron marked with fuscous; metasternum with fine dark border anteriorly and laterally; legs yellow-testaceous stained with fuscous, tibiae slightly darker than femora; tarsi fuscous.

*Head* gently concave anteriorly between swollen antennal bases; front triangular and flattened with fine median sulcus; vertex rather deeply concave anteriorly around short median longitudinal impression and bearing a few large punctures; postocciput with series of subtransverse sulci behind posterior margin of eye. *Antenna* extending to about basal fifth of elytron; segments 1-5 relatively smooth and moderately punctate; 3-5 distinctly swollen at apices; 6-11 dull and finely pubescent. *Prothorax* strongly narrowed anteriorly; anterior margin concave; anterior angle toothed on margin at side; side briefly swollen at middle, lacking distinct lateral margin; posterior angle briefly rounded; base convex medially, concave laterally where it can be covered by elytral base; disc somewhat irregular, concave prebasally, with fine median line; discal punctures deep, moderately distributed, but fewer submedially, larger and closer laterally where interspaces are mostly raised. *Scutellum* small, quite rounded apically. *Elytron* broadest along middle, thence narrowed preapically to large slightly upturned apical spine; apex also with a small tooth at sutural extremity; humerus prominent; discal punctures deep in irregular rows; mesal punctures largest and grouped most closely; lateral punctures with interstices more strongly swollen and irregular but some interstices tending to form weak costae. *Ventral surfaces* largely smooth; prosternum sparsely punctate; mesosternum more closely punctate; mesepisternum and mesepimeron with large punctures; metasternum smooth with fine impressed closely punctate margins anteriorly and laterally; abdominal sternites 1-2 connate. *Legs* slender.

*Measurements*: Body length 8.95 mm; breadth

3.0 mm; head breadth 1.42 mm; eye 0.66 x 0.48 mm; interocular space (above) 0.76 mm; gena 0.28 mm; interantennal space 0.34 mm; antennal socket breadth 0.23 mm; antennal segment lengths (1/100s mm): 36 : 32 : 58 : 48 : 48 : 36 : 30 : 26 : 28 : 28 : 44; head + pronotal length 2.74 mm; pronotal length (mid) 1.38 mm; pronotal breadth (apex) 1.50 mm; pronotal breadth (base) 2.10 mm; elytral length 6.39 mm.

**ALLOTYPE:** Female. Nearly identical to holotype. Antennal segments 1-5 pitchy fuscous instead of black, 5-9 dull fuscous instead of black.

**Measurements:** Body length 9.15 mm; breadth 3.40 mm; head breadth 1.44 mm; eye 0.62 x 0.44 mm; interocular space (above) 0.76 mm; gena 0.28 mm; interantennal space 0.34 mm; antennal socket breadth 0.22 mm; antennal segment lengths (1/100s mm): 36 : 32 : 56 : 48 : 48 : 40 : 30 : 26 : 26 : 28 : 44; head + pronotal length 2.65 mm; pronotal length (mid) 1.38 mm; pronotal breadth (apex) 1.56 mm; pronotal breadth (base) 2.06 mm; elytral length 6.64 mm.

#### REMARKS

The general facies and size of the new species show a greater resemblance to *Aproidea balyi* than to *A. cribrata*. See key for differences.

The new species is dedicated to Geoff B. Monteith of QMBA, collector of the specimens. Dr Monteith said that the specimens were knocked down after applying a pyrethrum spray in low dense moss forest at the summit of Thornton Peak. He mentioned that he had searched for possible plant hosts without finding any. The exact site was again visited in September 1984 and the

same collecting techniques were applied, but no *Aproidea* were found (pers. comm.).

#### ACKNOWLEDGMENTS

I am indebted to Geoff B. Monteith (QMBA) for providing the material that made this study worth pursuing, and also to G. R. Brown (NSWA), G. A. Holloway (AMSA), John F. Lawrence (ANIC), E. G. Matthews (SAMA), and Josef Sedlacek (JS) for lending specimens of *Aproidea balyi*. Michelle Chun (BPBM) prepared the illustrations. I am grateful to Felicia Bock, E. Gorton Linsley, and daughters of the late J. L. Gressitt for partial support to the J. Linsley Gressitt Center for Research in Entomology at Bishop Museum.

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